

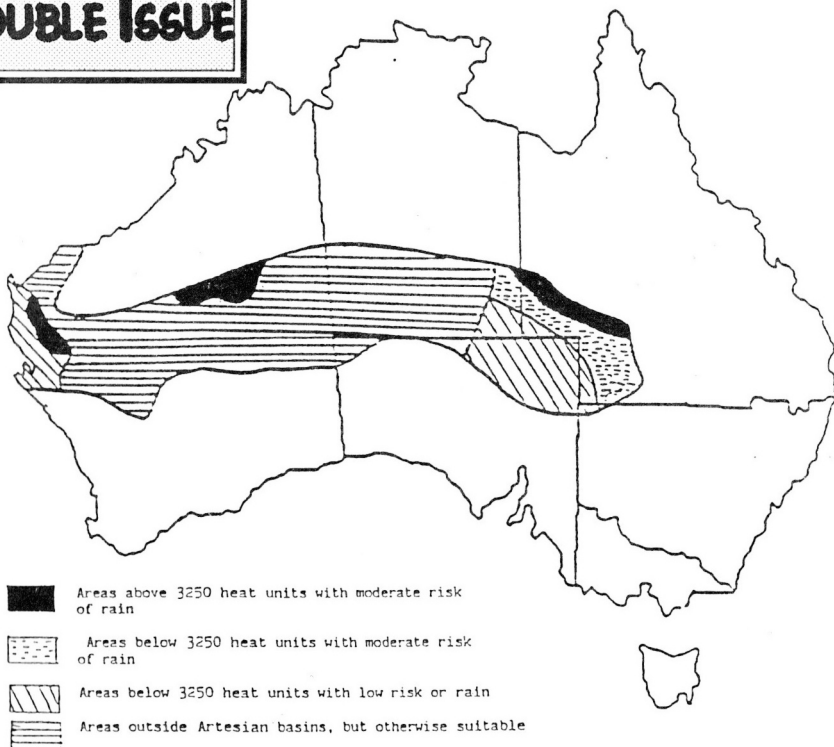
ACOTANC BULLETIN

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**SPECIAL
DOUBLE ISSUE**



Ecologically favourable areas in Australia for Date cultivation (See page14)

ACOTANC Inc

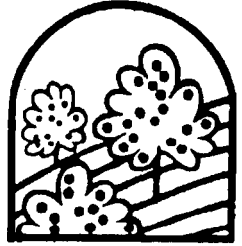
(Australasian Council/Conferences On Tree And Nut Crops)

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Secretary: Merv Richens



ACOTANC-95

Australasian Conference On Tree And Nut Crops

Lismore, New South Wales, Australia

September 11-15, 1995

PO Box 7091, Lismore Heights, NSW 2480, Australia

Phone: (066)-24 3211 • Fax: (066)-24 1007

Conference Secretary: Merv Richens

ACOTANC-98

Australasian Conference On Tree And Nut Crops

Hawke Bay, New Zealand

1998

c/o New Zealand Tree Crops Association Inc

PO Box 14053, Hamilton, New Zealand

Conference Secretary:

ACOTANC-2001

Australasian Conference On Tree And Nut Crops

Western Australia

2001

c/o West Australian Nut & Tree Crop Association Inc

PO Box 565, Subiaco, WA 6008, Australia

Conference Secretary:



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Welcome to Lismore

This is the last issue of Acotanc Bulletin before the staging of ACOTANC-95, the sixth Conference of the Australasian Council on Tree and Nut Crops. The most important industry-wide conference of its type in the Australasian region, it will take place in Lismore, northern New South Wales, on September 11-15, 1995.

This is the last opportunity for 3 years to attend an ACOTANC conference, and it promises to be a very valuable and well-attended occasion.

A first-class programme of speakers has been arranged, with experts both from the Australasian region itself, and from many overseas centres such as Russia, Israel, United States, and Tanzania.

With the theme *Successful Horticulture for the Future: Marketing, Innovation, Integration and Sustainability*, the Conference will have much of interest for everybody. Topics will range from new approaches to conventional perennial-plant

crops, through exploitation of new and previously neglected crops (some very recently brought in from the wild), right up to more searching social factors such as sustainability and environmental impact of different horticultural approaches.

The event is being run under the very able management of Conference Secretary Merv Richens, who is also the Secretary of the ACOTANC organization itself.

A program and registration form accompanies this issue of Acotanc Bulletin. This can be displayed and photocopied, or further copies obtained from the Conference Secretary in Lismore.



*Merv Richens,
ACOTANC-95
Conference Secretary*

Get \$20 rebate at ACOTANC-95

If you are a member of an organization which is a Full Acotanc Participant, you can claim a \$20 cash-back rebate from your own fees at the conference itself.

If your organization is not already a full participant, you can enrol it at the Conference and get your rebate on the spot.

The \$40 annual subscription for a full participant is equal to only 2 individual rebates - your organization can effectively get a free subscription by trading in rebates for two personal enrolments.

See page 5 for a list of current ACOTANC Participants. If your organization is not on the list, arrange for it to subscribe now or at ACOTANC-95.

Israeli fruit expert slates R & D approach

The current government and organizational approach to funding research into fruit and nut crops is all wrong, according to an Israeli expert visiting Australia.

Prof. Yosef Mizrahi, Professor of Desert Agriculture at the University of the Negev in Beersheva, Israel, explained his views at a recent meeting of the West Australian Nut & Tree Crop Association in Perth.

"Fruit producers in Israel are not poor farm workers, instead they are upper middle-class businessmen", he said. "To attain these incomes, they have had to be innovative and progressive in the introduction and culture of fruits not previously grown in the area".

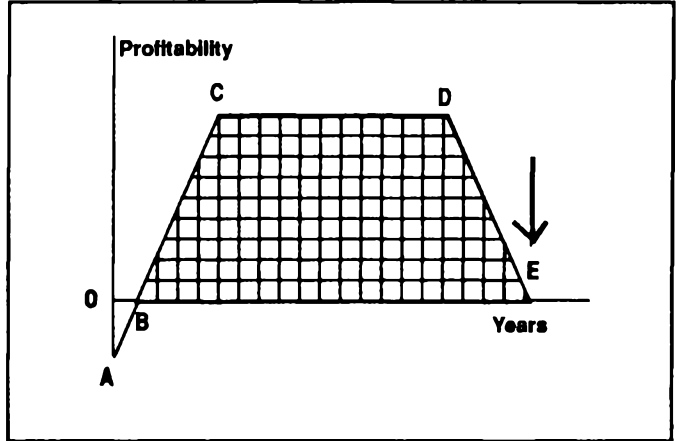
Prof. Mizrahi explained that the process of introduction and commercialization of a fruit followed a certain cycle. "The producer starts off with a period (A-B on the chart), before the plants start bearing, when they are not making any money," he said.

"As expertise in varieties and culture is built up, and the plants start fruiting, income increases (B-C). Eventually the producer attains high efficiency, market acceptability and export channels are worked out, and the produce gets good consumer interest and good prices (C)."

Then follows a period of good profitability (C-D) when R & D work is refined and prices remain good. This period starts to come to an end (at D) when increasing competition sets in, with growers in other countries using the methods and varieties

developed.

"This competition drives down the price obtainable for the produce," Prof. Mizrahi said. "Eventually a point is reached (E) at



which Israeli growers can no longer compete against low labour-cost countries such as Morocco".

It was at this point, when relative profitability had sunk to zero, that the fruit or nut crop was regarded by official organizations as an 'established crop'.

As an established crop, it became eligible to attract official research funding, usually denied to new crops regarded as 'unproven'.

"The end result is, that official support for R & D work starts to become available just at the point where the crop is no longer profitable," Prof. Mizrahi said. "If official research money was available at the beginning of the cycle, rather than at the end, this would be of much greater benefit for the country concerned".

Current ACOTANC Participants.... (come and join us!)

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Subiaco WA 6008 9-3853400 9-3851612 (Full)

Explanation: Details are: name, contact
person, address, phone, fax, (participant level)

Ask for your own Workshop!

Friday morning at the Lismore Conference
will be devoted to Special Interest Workshops.

Come prepared to suggest a topic and
participate in a workshop on your own special
interest. ACOTANC will provide the
infrastructure, you provide the brains!

Put in your own Poster!

On Wednesday at the Lismore Conference
there will be a display of Poster Topics.

Come with your own provocative poster
display, and perhaps discuss your topic with
other delegates. ACOTANC will provide the
infrastructure, you provide the brains!

AUSTRALIAN BANANAS - QUO VADIS?

The Australian banana industry is small by world standards but is located in four diverse environments - the subtropics of Northern NSW and South eastern Queensland, the tropics of North Queensland and the arid tropical and subtropical environments of Western Australia.

Most bananas in Australia grow 2000-3000 km from the main markets in the capital cities. The industry is very successful because a plentiful supply of bananas is available to Australians throughout the year.

The geographical and climatic differences between the growing regions mean that each part of the industry has unique problems. In North Queensland pests and diseases are a major concern, in NSW the cool winters and variable rainfall affect yield and especially quality, in WA irrigation management is critical to success. The main threats to the Australian industry are Bunchy top virus, the Black leaf streak disease and the soil-borne Panama disease that has crippled the Lady Finger cultivar.

The industry is organised regionally but is gradually gaining a national perspective. The *First National Banana Symposium* held at Kununurra, WA, in 1990 and the *First National Banana Congress* held at Broadbeach, Queensland, in May 1995 have helped develop the national consciousness. These meetings help the industry to grow and adapt to changing markets.

The 1995 Congress focussed on marketing and industry issues. The message is to produce a high quality product throughout the year. This needs a keen technical edge to overcome disease and climatic limitations. Despite the diversity within the Australian industry the Congress developed a number of common themes. These include improved technical innovations such as tissue cultured bananas. The Australian industry has been



much slower to adopt this technology than comparable industries overseas.

Quality assurance procedures will give the consumer a higher quality product than is marketed at present. The challenge for the industry is to adopt these procedures and develop the technology that will produce high quality fruit.

Speakers at the Congress challenged the Australian industry to confront the issue of improved varieties. The disease resistant Goldfinger cultivar was officially released at the Congress. It will replace Lady Finger. Hopefully it will be produced more abundantly than the Lady Finger so that the more remote markets in Australia will have the opportunity of purchasing it. Its success depends on how well the industry educates the consumer at point of sale, about its advantages.

Goldfinger comes from the banana breeding scheme in Honduras, Central America. Goldfinger was not bred specifically for Australia but hopefully will become a significant part of our production. Australia is a passive participant in banana

breeding because we test (rather than produce) new cultivars.

A national approach to banana improvement would give the industry more control of the qualities needed for Australian conditions. This would give us an international, as well as a national, advantage. Herein lies the future of the Australian banana

industry.

— *David Turner*

(Dr David Turner, a world authority on bananas, is Senior Lecturer, Plant Sciences, at the University of Western Australia, Nedlands, WA 6009.

(Phone 09-380 2415, fax 09-380 1108, e-mail: dwtturner@uniwa.uwa.edu.au).

[HRDC Media Release / 1995 Jan]

Investment in horticultural R&D pays dividends

Taxpayer investment in horticultural R&D is reaping substantial returns, with an internal survey showing millions of dollars in benefits being returned to the wider community annually.

The survey, conducted on R&D projects funded jointly by the Horticultural Research and Development Corporation and industry partners, indicates that a very large percentage of the benefits provided through research, are gained by the Australian community.

HRDC Chairman David Minnis said the findings provided a strong argument against a proposal put forward by the Industry Commission to reduce government R&D funding to 25c for each dollar contributed by industry.

The IC in its Draft Report on R&D indicated that the current dollar for dollar R&D funding did not provide the necessary spillover benefits to justify its continuation. Part of its argument is that the R&D Corporations focus their programs on industry outcomes with limited benefits provided to the rest of the community.

It also argued that"those who benefit

from the research, should, in principal, pay for it."

Mr Minnis said the HRDC study had clearly shown that these arguments could not be substantiated. "Major benefits can and do accrue to the community and consumers through the R&D direction adopted by industry through the HRDC," he said.

"Australian consumers directly benefit through access to a wide range of high quality fresh product, which is both affordable and produced in an environmentally sustainable manner."

"Improved efficiency and productivity also assist the continued economic development of rural Australia, providing employment opportunities, earning valuable export dollars and reducing our dependence on imported foodstuffs."

Mr Minnis said the Corporation intended to make a further submission to the IC on behalf of the horticultural industry.

"Rural R&D is an important investment in our future. It is important that this message is made clear to the IC to allow industry to get on with the job of providing a better way of life for all Australians".

The New Zealand Scene

(Ed: Acotanc Bulletin asked Michael Gaffaney, Executive Director of the New Zealand Fruitgrowers Federation, for an update on the tree crops situation in New Zealand. Michael was able to supply us not only with a current news update, but also a copy of a penetrating review paper presented at a recent Sydney conference, giving an excellent feel for the position of New Zealand in both the Australasian region and in the world as a whole. Part of this paper is reproduced here, other extracts should appear later.)

Introduction

The perspective I bring to the conference is that of the New Zealand Fruit Industry although the views are essentially personal ones.

The objective I have taken is that by the year 2000 New Zealand should have in place an internationally sized fruit trading business. You need to keep this in mind when considering the views put forward in this paper.

The New Zealand Industry

There are around 90,000 hectares devoted to horticulture in New Zealand. Half is in vegetables and half in fruit crops. There are some 5500 fruitgrowers, a similar number of vegetable growers, and 3000 people growing flowers.

Horticultural Exports in 1994 rose 5 percent over the previous year and represent 6.5% of all New Zealand exports.

NZ Horticultural Exports Year ended 30 June 1994

| Fruit | \$m | \$m |
|------------------------|-----|---------------|
| Fresh | 748 | |
| Processed | 123 | 871 |
| Vegetables | | |
| Fresh | 193 | |
| Processed | 125 | 318 |
| Seeds, Plants, Flowers | | 59 |
| Total | | \$1248 |

Late News (May 1995)

In general terms the current growing season has been good. The apple crop was very good quality, with high export packouts. We expect to export 16 million cartons. The kiwifruit harvest was two weeks later than normal, because of a warm Autumn and rain, brix levels were slower in coming up. The result is a big crop of big sized fruit. We will probably export just over 50 million trays.

Five products make up 75% by value of all horticultural exports.

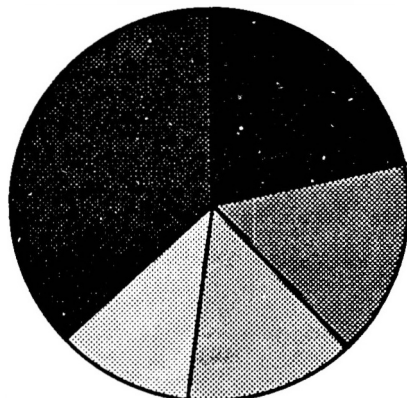
These are

| | |
|------------------|------------|
| Kiwifruit | 31% |
| Apples | 29% |
| Onions | 7% |
| Squash | 6% |
| Peas | 2% |
| Total | 75% |

Export Destinations

Some 55% of New Zealand's horticultural exports go to four countries.

| | |
|------------------|------------|
| Japan | 27% |
| UK | 10% |
| Australia | 10% |
| USA | 8% |
| Total | 55% |



World Fresh Fruit Production

Trends

The kiwifruit industry has reduced in size both in terms of number of growers and planted hectares. Much of this reduction has been in more marginal growing areas and coupled with increasing yields has meant export production overall has not fallen to the same extent and has levelled off at around 50-55 million trays.

From 1975 to 1985 there was a tremendous flow of urban investment into the fruitgrowing industry. Much of the investment was in kiwifruit but the apple, citrus and stonefruit industries were also the recipients of urban capital. The result was a period of significant industry expansion and although many of the investors have since departed the trees and vines are still there. Excessive debt levels also departed at the same time and in general terms the industry has now returned to its historical position of not being heavily indebted.

The pipfruit industry continues to expand in area and is undergoing constant renewal into new varieties. Exports this year are expected to be around 15 million cartons.

Ornamental horticulture continues its growth path and there is considerable expansion in the processed vegetable industry where production costs are said to be 20% below Australian costs. Japanese supermarkets are having their product packed in New Zealand as the costs are around 50% of doing the job in Japan.

Packhouse numbers in the fruit industry are declining as the need for greater efficiency becomes apparent. The kiwifruit industry has seen packhouse numbers fall from 620 in 1988 to 252 in 1994. Numbers are expected to fall further. A similar trend is likely in the pipfruit industry where there were 352 packhouses in 1993 including 118 packing under 10,000 cartons.

The horticulture industry is worth around \$1 billion (wholesale) on the local market and \$1.2 billion in export earnings. New Zealand exports over 100 different horticultural products in fresh and processed form.

To market these products we have a number of different marketing systems. Two products have marketing boards; another eleven products operate under a system of export licences through the Horticulture Export Authority while the other 80 or so products can be exported on a completely unrestricted basis. The Fruitgrowers Federation's position is that it will back whatever system the majority of growers of the particular fruit want.

Being a small island nation in the South Pacific, very dependent on exports, it is little wonder that our focus is an international one.

The two marketing boards between them will charter over 170 ships this year which is big business and represents around 15% by number of the world's reefer vessel fleet being used each year by the New Zealand fruit industry.

The World Fruit Market

World fresh fruit production is around 350 million tonnes. Just four fruits make up 63% of this production. They are:

World Fresh Fruit Production (mill. tonnes)

| | |
|--------------|-------------------|
| Citrus | 77 (22%) |
| Grapes | 57 (16%) |
| Bananas | 48 (14%) |
| Apples | 40 (11%) |
| All others | 127 (37%) |
| Total | 349 (100%) |

Source: Rabobank

Just 7% of this production is traded internationally and is worth \$US 30 billion, of

which \$US 13 billion is from the top four fruits.

New Zealand does not really feature in the top three fruits. We lack a suitable climate to grow bananas, and as far as citrus and grapes are concerned we do not have the climatic conditions to compete with the major world producers. We have a very successful apple industry and of course pioneered the commercial production of kiwifruit. While our kiwifruit industry is quite large, in terms of the world fruit industry kiwifruit is a minor crop accounting for about one third of one percent of world fruit production.

The bigger world fruit producers are countries with a large domestic market. New Zealand has a small population (3.5 million) and as a result we have a high dependence on exports. I estimate some 75% of all the fruit we produce is exported. This is a high percentage internationally. Most of our fruit is exported to the Northern Hemisphere as this is where most of the world's people live. As a result of these two factors we need to be very well organized.

— *Michael Gaffaney*

Go to Special Symposiums!

Tuesday morning at the Lismore Conference will be devoted to Symposiums.

Four topics already prepared:

1. New Crop Potential - Production & Marketing.
2. Recent Innovations in the Fruit & Nut Crop Industry.
3. Environmental Sustainability of Fruit & Nut Crops.
4. Marketing & Economic Viability of Tree Crops.

[The Northern Star/ 1994 December 31]

Nuts galore on the agenda

Visitors to a conference in Lismore in 1995 may learn about growing chestnuts in Turkey, pine nuts in New Zealand and the forest nut crops of Russia.

They will also be able to inspect more than 300 trees planted near Alstonville as a gene bank for native and exotic species with tree crop potential.

That planting of bush tucker trees was

willing to speak on English walnuts, hazels, almond, pistachios and forest nut crops.

Topics for other growers and academics include almonds, tropical fruit, macadamias, chestnuts, pine nuts, cashews, stonefruit, and



Prof Basil Srafis, left, and Prof Yosef Mizrahi try the taste of Davidson's plum at the Summerland House With No Steps planting of Australian bush tucker trees.

funded by a surplus from the 1988 ACOTANC (Australasian Conference On Tree And Nut Crops), also held in Lismore.

ACOTANC-95, at the Lismore and District Workers Club from September 11-15, is expected to attract about 300 delegates.

Conference secretary Merv Richens, of Goonellabah, has received expressions of interest from 20 overseas speakers and 30 Australians, including 14 local people.

One researcher from St Petersburg is

avocados.

An Israeli researcher, Professor Yosef Mizrahi, has a special interest in wild and rare fruit trees as new crops for desert areas, and also cacti as horticultural crops.

He is spending a sabbatical year from the Ben-Gurion University of the Negev, Israel, at the University of Western Sydney.

During a recent visit to the North Coast with Prof Basil Srafis from that university he inspected the arboretum of indigenous

tropical and sub-tropical fruit and nut species — or bush tucker trees — growing at the Summerland House With No Steps, near Alstonville.

The trees were relocated there from an experimental planting at the Tropical Fruit Research Station at Alstonville, started after the 1988 conference as part of an investigation of Australian plants with a food potential.

Some of the 384 trees of 35 species are now fruiting, so Prof Mizrahi and Prof Srafi were able to taste the smooth Davidson's plum, so rare that only a few plants remain in the wild.

Other varieties planted include tamarinds, lilly pillies, plum pines, bopple nuts, Herbert River cherry, native raspberry, riberry and peanut tree.

— Jennifer Somerville

The changing face of the Australian Apple Industry

New apple varieties such as Royal Gala/Gala, Fuji, Pink Lady and Sundowner are the future for the Australian apple industry.

These varieties have given the Industry added dimension and built on the standard varieties of Red and Golden Delicious, Granny Smith and Jonathan. Variations in colour, texture and taste along with improved shelf life gives the industry new marketing opportunities and challenges. Demand for these varieties in overseas markets, particularly in South East Asia (Gala and Fuji) and the UK and Europe (Pink Lady) has given increased stimulus to our export opportunities.

Royal Gala/Gala

Originated from New Zealand by crossing Golden Delicious and Kidd's Orange.

An early season variety harvested in February but available through the marketing chain until mid to late May. This variety has dense, crisp textured flesh and is normally sweeter than Red Delicious.

Australian Fuji

Bred in Japan where it is a major variety. A mid to late season variety harvested in April and available through the marketing chain

until September/October.

This variety has an extremely dense textured flesh and is a firm, crisp, juicy apple with a very distinct flavour.

Pink Lady

Originated in Western Australia as a result of crossing Golden Delicious and Lady Williams. Golden Delicious is the dominant parent.

A late season variety harvested in May and available through the marketing chain from July to October.

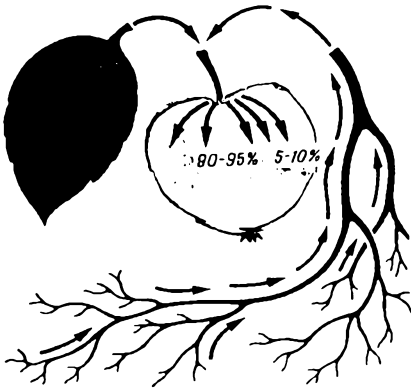
This variety has a firm, fine flesh and is a crisp apple with an excellent flavour.

Sundowner

Originated in Western Australia as a result of crossing Lady Williams with Golden Delicious.

A late season variety harvested in May and available through the marketing chain from July to October.

This variety has fairly firm flesh and storage improves sugar levels and makes



Sundowner a sweet, flavoursome apple.

Linked with these new varieties is the expanding use of dwarfing rootstocks and the trialling of high density plantings.

One of the most important decisions that faces growers nowadays is to work out what rootstock to use for a particular variety. Some varieties are very vigorous, and need to be slowed down, so a dwarfing rootstock is usually more acceptable, eg Royal Gala. Others crop very heavily and tend to runt out unless a more vigorous rootstock is used. To arrive at the perfect combination is not very easy and requires consideration of a number of factors.

The South Australian Pome Fruit Improvement Committee has, for many years, provided information to Industry on a range of rootstocks. One such rootstock is Malling 9 (M9) which is regarded, world wide, for its dwarfing and cropping abilities. Unfortunately, its lack of availability and grower concerns on its suitability to our soils has restricted its use in Australia. However, as we move into the realm of higher density orchards its importance in Australia will increase. It may not be suitable for all sites but the tree size it produces under optimum conditions will become a benchmark for higher density orchards.

Given the complexities of matching rootstock with the scion (variety) with the conditions of a region and the need to reduce production costs, particularly harvesting costs, the Apple Industry within Australia continues to face some very major and important challenges.

— Trevor Ranford

(Trevor M Ranford, B.Sc., Dip MP (AIMSA), is General Manager of the Apple and Pear Growers Association of SA Inc.)

[Scientific Ag Co: Beekeeper Newsletter / 1995 April]

Million-tree California almond loss

About 1 million almond trees (the equivalent of about 12,000 acres or 3% of the total acreage) were blown over during the spring storms.

Damage was extremely variable with some orchards experiencing no damage and some 50% loss. In almost all cases the affected trees were older and were on peach rootstock (virtually all older trees are on peach root).

Growers that irrigated before the winds hit suffered the greatest loss. A few orchards that suffered severe loss are being pulled out and written off.

The damage shouldn't have a significant long-term effect since many of the orchards were nearing the end of their economic life. Half or more of the state-wide wind loss occurred in Kern county. Since most newer plantings are on deeper rooted hybrid (peach/almond) rootstock, it is unlikely that the almond industry will ever experience such a loss again.

— Joe Traynor

Industry Focus:

DATES - THE AUSTRALIAN INDUSTRY AND THE FUTURE

The following summary essentially consists of extracts from an article by Geoff Kenna published in the 1995 WANATCA Yearbook, put out by the West Australian Nut & Tree Crop Association (reference 1). This full article is based on a 1993 paper presented at a conference in Carnarvon, WA (reference 2).

Introduction

The date palm has perhaps been grown longer as a domesticated fruit than any other in the world.

The date palm, *Phoenix dactylifera*, belongs to the family Areceacea. It is in the same genus as ornamental palms such as *Phoenix canariensis*, the Canary Island palm and *Phoenix sylvestris*, the Sugar palm. One of the main distinguishing features of the date palm is that it produces offshoots.

Botanical description

Date palms may live for over 80 years although the commercial life of the palm may be much less depending upon many other factors including climate, soils, quantity and quality of water etc. They may also attain great heights, up to 20 metres.

It was not until the late 1800's and early 1900's that date research and development began with the introduction of seeds and later offshoots into the United States from the old world, including Algeria and Egypt. The commercial development of the date however did not occur until a satisfactory method of handling imported offshoots had been developed.

Major date producing countries

Dates are produced by a number of countries centred on Africa and Asia. The date is still a staple food item in many of these countries. The quality of the product however

varies considerably. Many of the major producers such as Egypt, Iran, Iraq, China and Pakistan produce high volumes of low quality fruit. Countries such as the USA, Israel and Tunisia produce a high percentage of high quality fruit which is in demand on export markets.

History of date growing in Australia

Date palms have been grown in Australia since late last century. Palms were originally established in a number of areas which were considered suitable for date production.

These areas include the Northern Territory, South Australia, parts of New South Wales, Queensland, and Western Australia.

Commercial date plantings in Australia

Date palms are ideally suited to the climate in Central Australia. Many date palms were planted in the town of Alice Springs and at various Station homesteads and waterholes throughout the arid part of the continent.

El Mima (now Mecca Date Gardens)

The first commercial date planting was established at Alice Springs in 1952 by Mr and Mrs V J De Fontenay. The palms were selected from seedlings which were growing in the town area. Twenty female palms were pollinated and fruit quality assessed. Fifteen of these palms were eventually selected and



Date palms at Gascoyne Research Station, Carnarvon, WA

eight were transplanted to El Mima (now Mecca Date Gardens). The age of these palms conservatively ranged from 15 to 60 years. Offshoots from all palms are growing at the Date Gardens to this day. Another two date plantations have also been established in the Alice Springs area.

Arid Gold Farms

Located at Deep Well, approximately 80 km south of Alice Springs. Approximately 2,000 palms are established here and consist of seedlings, offshoots from seedlings, offshoots of named varieties from California and tissue cultured palms. The oldest palms, which are seedlings, are 8 years old and the youngest offshoots and tissue cultured palms are 4 years of age.

Limestone Bore

Located approximately 60 km south of Alice Springs in the same area as the Arid Gold

Farm. This area has only recently been developed as a date plantation. An initial planting of approximately 150 palms of named varieties, either offshoots or tissue cultured, has been made. Further plantings are planned in the near future using tissue cultured palms which are being weaned and grown in pots at the present time.

Western Queensland

Commercial plantings of dates have been established in the Cunnamulla - Eulo area of Queensland. Approximately 5,000-6,000 palms are planted in the area. They are all seedling selections or offshoots from seedling selections. Plantations range in size from 300 to 1,100 palms.

Many palms are 6 to 8 years of age and cropping for the first or second year this season. Apart from being marketed as fresh dates the fruit is also value added by being

used to produce Date Chews, Date Wine and Date Spread.

Carnarvon, WA

A small planting of palms has been established at Gascoyne Junction, west of Carnarvon. The palms were obtained as offshoots from California and are all named commercial varieties. They were planted out in 1990.

Agronomic requirements

Soils

Dates will grow on a range of soil types. The desirable attributes of a suitable soil are a loam or sandy loam texture with good moisture holding capacity yet free draining, with a pH around 7. The salt content should be low. Although palms will grow in salty and sodic soil, plant growth and yields are reduced significantly.

Climate

A long hot growing season and the absence of rain during the fruit maturation period is essential for commercial date production.

Irrigation

Like all other commercial horticultural plantings in the Centre, date palms will not survive and produce commercial quantities of fruit without frequent irrigations. Bores are used to supply irrigation requirements. Water quality varies considerably from 1,000mg/1 T.D.S. up to 2,500mg/1 T.D.S. Plant growth and yields do not suffer with efficient application of poorer quality water.

Drip irrigation is the most common system used to irrigate palms in Central Australia. Water can be supplied efficiently using this system and at a reasonable cost. Annual water requirements for a hectare of palms grown in the Alice Springs region range from 2.5 megalitres m year 2, to 27 megalitres for mature palms at year 12.

Nutrition

Palms grown in Central Australia do not appear to have any extraordinary requirements compared to those of other perennial crops. A preplant application of complete fertiliser is advisable. As all palm plantings are under micro irrigation, fertigation is the most efficient means of applying nutrients. The exact nutritional requirements of date palms growing in Central Australia has not been properly defined. The Department of Primary Industry and Fisheries is conducting a comprehensive soil and plant analysis program to determine crop requirements.

Pollination

The date palm is dioecious, having separate male and female plants. Natural pollination will result in poor yields, therefore the female flowers must be hand pollinated. The male flowers are cut from the palm as they emerge from the spathe which protects them up to maturity. The flowers are then dried and the pollen removed by shaking and sieving the loose flower parts from the pollen.

Pests and diseases

Parlatoria Scale is the major insect pest of dates in Central Australia and many other parts of Australia and overseas countries. The scale originates from the Middle Eastern countries where dates are grown and is thought to have been introduced into Australia on offshoot material in the early 1900's. The incidence of diseases which affect date palms in Central Australia's hot, dry climate is negligible.

Flowering

Low temperatures at pollination may reduce set. A temperature around 32°C is considered ideal for pollination.

Fruit maturation

A long, hot growing season is necessary to

maximise fruit growth, quality and maturity. Varieties such as Deglet Noor are late maturing and require a long growing season to mature quality fruit.

Summer rainfall

The incidence of rain during the fruit maturation period can have a deleterious effect on fruit quality. Checking, blacknose and splitting are problems associated with rain damage. Secondary infections by moulds and fungi and insect damage may also result.

Some varieties are more tolerant to rain than others. In addition to this early maturing varieties are more suited to areas with a high incidence of summer rainfall. Research work is being conducted at the present time at the Arid Zone Research Institute using various bunch covers and materials to protect fruit and reduce the incidence of rain damage.

Propagation

There are three main methods of propagating date palms. These are via Seedlings, Offshoots, and Tissue Culture. Details of the different methods and their implications are given in the full paper.

Labour requirements

Date production is highly labour intensive. Virtually all of the operations in the plantation involve manual labour.

Dethorning of leaves to gain access to the palm, pruning old leaves, collecting male pollen, separating the pollen from the dried flowers, preparing and pollinating the female flowers, thinning, applying bunch covers, harvesting, packaging fruit and applying sprays for Parlatoria Scale control all require a substantial labour input.

At peak production fixed costs for a 10 ha planting are estimated at \$94,225 per annum. The cost of permanent labour plus on-costs is \$63,250. This is 67% of the total cost.

Yields

Palms are usually planted at spacings of 9 metres x 9 metres with a total of 123 palms per hectare. One male palm is planted for every 30 female palms. The male palms are usually grown together in one area of the planting.

Palms begin to bear fruit 5 to 7 years after planting out. They usually peak in production at year 12. Average yields range from 5 kg at year 6 (615 kg/ha) to 100 kg for a mature palm (12,300 kg/ha), from year 11 onwards.

Varieties

The number of named commercial varieties of dates is extensive. The varieties being grown in the Alice Springs region at the present time are based on the Californian industry assessments.

Fruit size, time of maturity, eating qualities at various stages of maturity and rain tolerance are criteria for selecting varieties which may perform well in Central Australia.

The economics of date production

A recent economic analysis of date production in Central Australia indicated that a price of at least \$3.20/kg was required in order to break even at the end of a commercial date project. Obviously for commercial production of dates to be financially attractive returns higher than this are necessary.

As manufacturing grade dates, which includes much of the production from seedling palms will return less than \$3.20/kg the production of high quality dates must be the priority for commercial date plantings in Australia.

Over 1,100 tonnes of fresh dates valued at more than \$2,853,554 were imported into Australia in 1992. The price per kilogram for these dates ranged from between \$0.84/kg and \$6.89/kg. During the same period 2,673 tonnes of dried dates were imported with the price per kilogram ranging from \$1.16/kg and

\$5.57/kg. Date imports into Australia from 1990 to 1992, with country of origin, are given in the full paper.

Market opportunities for Australian dates

Domestic markets

The demand for high quality dates in Australia is not high at the present time. There are a number of reasons for this including the fact that consumers are not aware of the excellent eating qualities of this type of fruit. In many instances Australians have only experienced dates which are of an inferior quality such as processing grade fruit in cakes etc.

In order to ensure that quality dates remain a high priced commodity and demand increases, an effective domestic marketing campaign will have to be launched aimed at increasing awareness amongst consumers of the excellent eating and nutritional qualities of dates.

Superior quality dates, both from named varieties and seedlings will replace imports of lower grade processing fruit.

Export markets

Export markets for high quality fresh dates must be developed in conjunction with domestic markets. The demand for dates on overseas markets is high during the March-April period. Singapore imports dates for the Hari Raya (Malay New Year).

Demand in the USA during April is high due to the Jewish Passover and Easter. Australia may have a competitive advantage during this period. Middle Eastern countries are also potential markets for Australian dates. Fruit in the khalal stage meets good demand and commands high prices in many of these countries. Fruit at this stage of maturity has limited storage and shelf life. Demand at this time coincides with the Australian harvest.

Australia has exported small quantities of dates in the past. These exports have been on an opportunistic basis.

Summary

• Dates are grown in many parts of the world and are an important food crop in many old world countries.

• Dates were first introduced into Australia in the late 1800's. They were not grown commercially until the mid 1900's.

• Date plantings are expanding in the Alice Springs area. There are three commercial plantings of dates at the present time.

• Dates are suited to a range of soils and respond well to efficient irrigation practices. They do however have specific requirements regarding the duration and degree of heat encountered during the period the palm is sizing and maturing fruit.

• Summer rainfall is detrimental from a fruit quality aspect.

• Parlatoria Scale is a major impediment to the date industry reaching its full potential in the Northern Territory. A program is in progress to eradicate this pest.

• Planting material can be obtained from seed, offshoots and by tissue culture. Seedlings have a number of problems. Offshoots and tissue cultured palms of named varieties are the only recommended means of establishing a commercial planting.

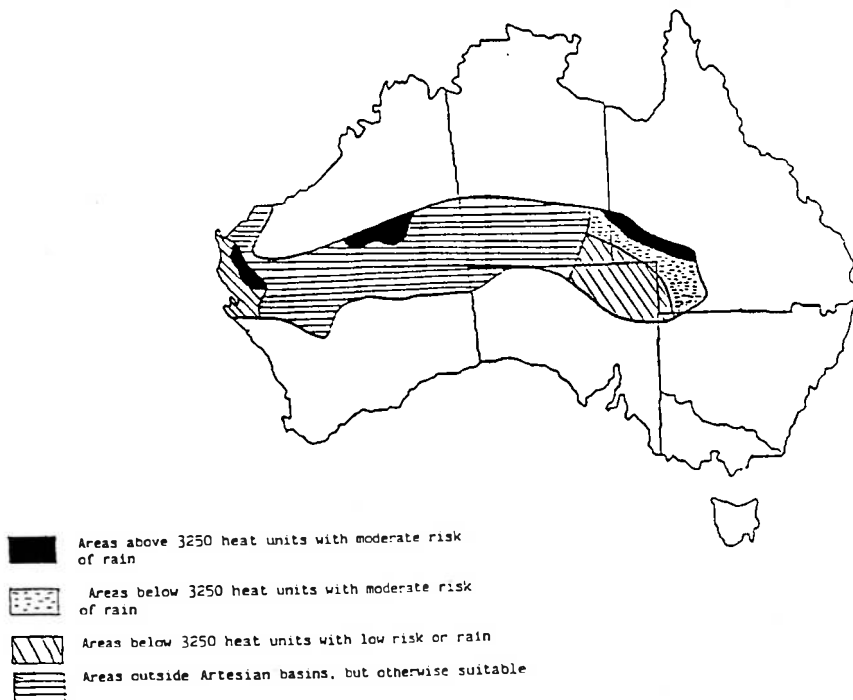
• Planting material of named commercial varieties is very scarce within Australia at the present time.

• Commercial date production is highly labour intensive.

• Date palms begin bearing fruit at around 5 years of age and reach full production at around 11 years of age.

• Dates are harvested at various stages of maturity and moisture content depending upon the market requirements.

• Large quantities of dried and fresh dates



are imported into Australia each year. Australia must target the production of high quality dates and develop sustained export markets in conjunction with an expanded domestic market.

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BOOK REVIEWS

by David Noël

Pecans, A Grower's Perspective. G. Wesley Rice. Published by Pecan Quest, Oklahoma, 1994. 198 pages, Paperback. *\$69.95, Hardback edition *\$101.00.

Where there once was a dearth of information available on pecans, we have recently seen the appearance of more and more useful books, some of high quality. The present book falls into this latter category.

As the book states, it is written from the viewpoint of a grower, rather than a researcher or an extension officer. Like all current material, it does emanate from the United States, the home of the pecan.

This book has received good reviews in the USA. Tommy Thomson, of the USDA-ARS Pecan Breeding Program, writes that it is "A refreshingly written practical approach to profitable pecan production. This book will be enjoyable reading for anyone nuts about

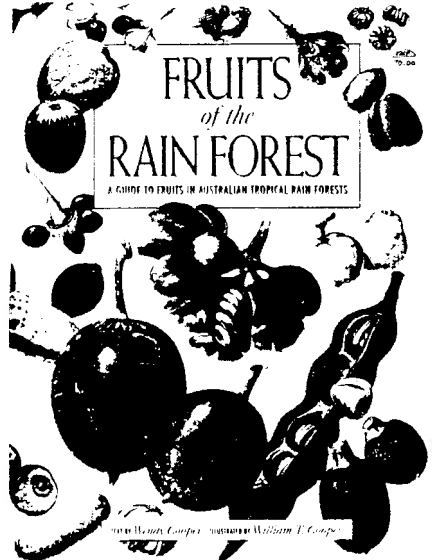
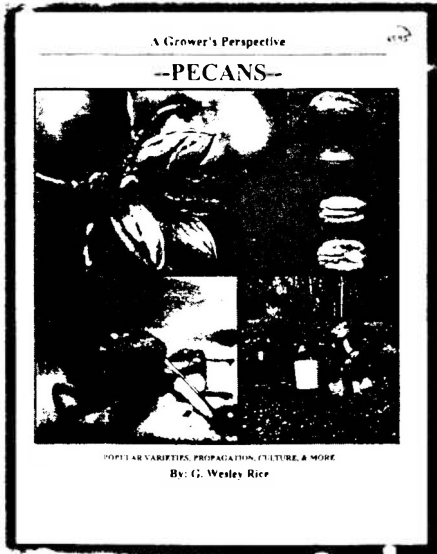
pecans; young or old; grower, sheller, or researcher".

A useful addition to the literature, and a good starting point for the would-be professional grower.

Fruits of the Rain Forest: a Guide to Fruits in Australian Tropical Rain Forests. Text by Wendy Cooper, illustrated by William T Cooper. Published by RD Press, NSW. 327 pages. Hard Cover. *\$70.00

This is a superb and unique new book put out by the local book publishing unit of Readers Digest.

Quality of reproduction of the beautiful and detailed colour paintings is first-class.



This enables them to be used with some confidence in identifying fruits picked up from the forest floor. However, the 'fruits' of the title is used in the botanical sense, rather than implying they are edible, and the author cautions against random sampling of

attractive specimens without positive identification of its edibility.

This is a large-format book. In the main body, each right-hand page shows the colour paintings of the fruits alone. The left-hand page gives information on each species: botanical name, fruit description, season, tree habit, leaf type, distribution, uses and edibility if known, and species with which it might be confused. Also shown are line drawings of the leaves and leaflets.

Over 600 species are covered, including many I have never seen illustrated before, or even heard of. For example, there's an excellent reproduction of *Hicksbeachia pilosa*, the Red Bauple Nut. I was familiar with *Hicksbeachia pinnatifolia*, also called Red Bauple or Bopple Nut or Rose Nut, a macadamia relative with an edible nut from northern NSW, but did not know of this more northern relative (also edible).

While all the species shown are native to northern Queensland, this does not mean that they are unsuited to other places. More than 100 of the species are found native further south, some as far as Victoria, and experiments have shown that many of these assumed "tropical" species will grow well outdoors in southern areas such as Perth if the right conditions are supplied.

This wonderful book is highly recommended.

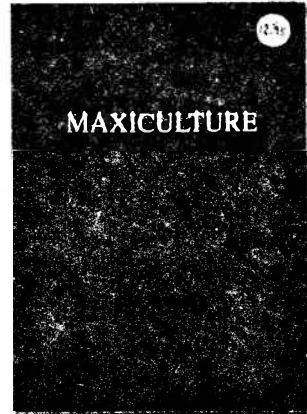
Maxiculture: Beyond Agriculture. J.A. McNamara. Published by the author, Adelaide, 1991. 67 pages, Paperback, *\$12.95.

Here is a review which should probably have started off "And now for something completely different". Certainly this modest little book is a total contrast to the book

referred immediately previously. Rather than one containing facts and information, it is the result of deep thought and analysis of what underlies the science and practice of growing plants useful to man.

The flavour is given by the author's own blurb:

"The author suggests ways in which our understanding of how living things behave, might be applied in an approach to land use, for food production, that may be carried on in perpetuity; replacing agriculture, by minimising our intervention, while maximising the use of our best understanding of evolution and ecology — and calls it maxiculture."



The following extract well summarises the whole underlying philosophy applied:

The Approach

"I have tried to identify the important components of an approach to land use that will best support my own life and that of my family in perpetuity. In attempting this I endeavoured to look beyond customary knowledge and to employ the best

understanding of living systems while minimising effort. It can be said that we know how to feed ourselves well enough, through farming, but it may be that agriculture is not the best way.

It may be that we can live as part of a more efficient system, a system based on the growth of as many different kinds of useful plants as it is possible to have growing on a piece of land. My conclusion is that such a system is best.

Whatever plant is grown should be left to struggle so that its fitness can be seen. Plant as many as possible from seed. Those that do not thrive should be removed. By this method the natural variability of seedlings can be exposed to the selective forces of nature and

human choice so that those favoured will be preserved.

Continuing this process through successive generations will lead to an improvement by our own criteria and in response to natural stresses. By this means also there will be evolution of all the living components of the system toward more complex and reliable ecological relationships in which we are included.

It does not matter if most fail. That is actually a good result because you can discover which individual plants do thrive in the local conditions and these can become the parents of the next generation."

* Price at Granny Smith's Bookshop (see advert page 31).

Research cooperation off to 'a great start'

Acotanc Bulletin contacted David Peasley, Program Leader for Tropical Fruit at the Alstonville Tropical Fruit Research Station, to ask about progress with T-Fruit Link, the NSW/Queensland/CSIRO scheme for collaborative fruit research. Here is his response.

With only just over 12 months of cooperation, we have held a combined meeting of professional staff from both state cooperating centres and included CSIRO to develop a general agreement to cooperate and share resources and projects.

Industry R & D teams have been formed, and projects are now reviewed and prioritised before going to industry and funding bodies for support. We have conducted an audit of staff and resources and maintained contact through regular industry meetings and the T-Fruit Newsletter.

The emphasis on the T-Fruit Link has been on 'grass-roots' cooperation rather than bureaucratic structure, and that approach seems to be developing very well.

Diminishing financial resources was the major trigger in this initiative. Cooperation was the only way to maintain quality R & D services to horticultural industries in the Sub-Tropics.

The spirit of cooperation is gaining momentum, despite early reservations and parochial attitudes which persist in some areas. As Program Leader I am doing as much as possible to free-up the process, by encouraging cross-border travel, field days, seminars, cooperative projects etc.

The process will take time, but I believe we have made a great start.

— *David Peasley*

(TFRS Alstonville is at PO Box 72, Alstonville, NSW 2477 - phone 066-28 0604, fax 066-28 5209)

[Australian New Crops Newsletter / 1995 January]

The Trials of New Crop R&D: Getting the Germplasm

The following remarks were included in a private communication received recently by one of the Editors from a colleague: the colleague has chosen to remain anonymous and cynical. The crop itself is not mentioned, since it could be any one of many.

Once I was convinced that the economic viability of my proposed crop was exceptional (why hadn't anyone thought of it before?) I needed to see if there was practical potential for the crop. I am an economist. No problems.

The first obvious step was to get some seed. No problem. Once the plants were growing well, then all the problems anticipated for a big new crop entrepreneur could be investigated and hopefully solved easily. Harvesting ... logos for the trucks ... high fibre recipe books ... guest spots on midday television ... sponsorship of car racing, etc.

A lovely vista of the new crop stretching to the horizon would mean producers and processors would be beating a path to my door and paying huge prices for their chance to get into this new technology.

For starters, I needed seed. Contact a seed company. Look up the phone book.

How do you spell that, sir? G..O..G..G..O..M..O..B..I..L..E.... Nobody had the seed in Australia. Nobody had heard of the crop in Australia. Must be on to something good here.

Hence, I phoned seed suppliers overseas. At last, I found a seed supplier in Europe who knew about the crop and about Goggomobiles too. The only problem was that they thought I was from Austria. A..U..S..T..R..A..L..I..A. Once the message was finally transmitted to

everyone's satisfaction, the seed was dispatched by air-freight since I wanted to sow as soon as possible. Easily done. No problem.

Air-freighting a small package from somewhere else to Australia and not using a Customs Agent is a problem. To clear customs and quarantine can be difficult. The rest is easy once the maze of customs and quarantine has been negotiated.

To clear customs you need quarantine clearance and to clear quarantine you need a customs clearance. The advice to me from the customs officer was to complete the paperwork which was obviously designed by a Warrant Officer Quarter Master: to complete the application for clearance the material being imported needed to be correctly coded. The code was contained in volumes, about the size of Encyclopaedia Britannica. No problem.

The volumes in question were not available at the airport, adjacent to the imported package and me. The volumes were available in the Library of the Customs and Excise Department in the city (25 minutes away), open 10 until 2, Mondays and Thursdays. So far so good.

With a correctly completed form (eventually), including the correct code, I discovered that it was necessary to pay duty. No duty was payable on the package in question. Or more precisely, \$0.00 was

payable. You must attach a cash register receipt for the amount of duty payable. In this case, \$0.00. No problem.

Cash register for payment of duty is open daily 10 to 3. At the time I discovered this, it was 3.40 p.m. Back tomorrow. Join the queue.

What was the cost of importing 2kg of seed?

| | |
|---|------------------|
| <i>Purchase price</i> | \$US 100 |
| <i>Freight</i> | \$US 37 |
| <i>Total</i> | \$US 137 |
| | = A\$ 177 |
| <i>Customs entry</i> | A\$ 0 |
| TOTAL | A\$ 177 |
| <i>Parking at airport waiting for customs forms</i> | A\$ 6 |
| <i>Taxi to city office of Customs</i> | A\$ 6 |
| <i>Taxi from city office</i> | A\$ 6 |
| <i>Taxis to/from airport (another four trips)</i> | A\$ 48 |
| <i>Two days wages lost</i> | A\$ 160 |
| <i>Bond store charge (due to late collection of item, due to restricted library hours of Customs, due to the need for a coded form)</i> | |
| <i>One package 2kg</i> | A\$ 50 |
| <i>Quarantine inspection</i> | A\$ 40 |
| EVENTUAL TOTAL | A\$493 |

This figure does not include the increased costs of medication for me (and the taxi drivers and Customs employees) due to high blood pressure. Like Jack and the beanstalk, I had parted with a good deal of money and all I had was a small packet of seeds.

But wait. I had faxed many other seed companies, as well. Four more 2kg packages arrived on separate occasions. Knowing the ropes by now, the process of customs and quarantine was a little more bearable. Four

times I queued at the cash register for a receipt for the duty payable. \$0.00.

How easy everything is if we take it one problem at a time. I have since learned, incidentally, that importations through the mail do not need a cash register receipt for \$0.00.

Knowing nothing about plants, I consulted with a friend who had a glasshouse so we could germinate the seeds, grow the seedlings, transplant them, etc. No problem.

But that's another story.....

[American Fruit Grower / 1994 June]

Ships as floating CA fruit stores

New shipping containers with in-built Controlled Atmosphere technology are taking to the sea, from USA ports.

Each refrigerated shipping container carries a microprocessor that regulates the level of oxygen and carbon dioxide to match the requirements for each commodity. The entire system uses less power than a 25-watt light bulb to maintain the correct atmosphere.

The US Military have commissioned the use of several CA containers to ensure fresh produce reaches their military base at Guam in good condition, an exercise which usually involved expensive air-freight delivery.

There is even potential for the CA containers to replace the current requirement for many products to be fumigated with Methyl Bromide (for insect control). The CA atmosphere would ensure all insects are killed.

This is good news considering many parts of the world are looking to phase Methyl Bromide out completely, as it is a known Ozone depleter (plus not very user friendly).

[Horticulture Research & Development Corporation: Media Release]

Horticulture R&D funding could drop by 75%

The Industries Commission hearing on research and development has been told that funding for horticultural R&D could drop by seventy five percent over the next three years if the IC funding recommendations are accepted.

The Industry Commission Draft Report on research and development has recommended that government funding for rural research is changed from a dollar for dollar basis to 25 cents from government to every one dollar provided by industry.

In presenting the Horticultural Research and Development Corporation submission to the IC hearing in Sydney this week, HRDC Chairman David Minnis said moves to change government funding for rural research would reduce horticultural R&D funding from an anticipated \$30 million in 1997/98 to \$5 million.

"If this occurs industry will lose the benefits of nationally coordinated research programs directed at lifting industry competitiveness and capturing export market opportunities," he said. "The Horticultural Task Force vision and goals for lifting horticultural exports to \$2 billion by the year 2000, are simply unachievable under the IC recommendations."

Mr Minnis said the IC Draft Report had outlined policy guidelines for government funding of R&D and provided a far sighted vision of an Australian R&D sector driven by community needs, funded appropriately from government and private sources, and

operating in a competitive and transparent environment.

"Moves to reduce the ratio of government to industry contributions is clearly inconsistent with the policy guidelines. It will reduce efficiency in the conduct of rural research and place at risk many of the improvements achieved in R&D infrastructure over the last decade."

The HRDC submission argues that the existing model for Research and Development Corporation funding measures up well to the guidelines outlined in the IC Draft Report and should be maintained.

The Corporation has asked the Commission to consider the following policy proposals:

- Maintenance of the current dollar for dollar funding arrangements.
- An increase in the government funding ceiling from 0.5 percent to 0.75 percent to provide both an encouragement to growers to contribute through levy arrangements and a cap to commonwealth contributions under the R&D model.
- A change from tax deduction to tax credit for grower levies making funding arrangements more consistent between agriculture and other sectors.
- A continuation of existing reporting arrangements through annual conferences and meetings, rather than the imposition of an Annual General Meeting which would impose extra costs and would likely to be poorly attended.

• Maintenance of cooperation rather than competition between R&D Corporations for growers funds to enable the continuation of joint funding of specific research.

The HRDC has criticised the IC assessment that the level of spillover of benefits from agricultural research to the rest

of the community is relatively low, claiming that the finding is unsubstantiated and inconsistent with relevant evidence.

A study of the benefits from the current HRDC funding program indicates that 47 percent of the benefits flow to sectors other than the industry contributor.

Mr Minnis said the results were not surprising given HRDC involvement in both production and amenity horticulture.

"The Corporation is in a unique position of funding projects with direct relevance to both urban and rural Australia through its coverage of a wide range of industries including nursery, cut flowers, turf and ornamental horticulture.

Mr Minnis said the wider community does benefit from its investment not only through the economic contribution of industry, but also through the cost effective production of new and better products, higher quality foodstuffs and the development of economically, and environmentally

sustainable production systems.

"In the horticultural sector Australian consumers benefit from the ongoing supply of a wide range of high quality, fresh produce," he said.

Mr Minnis said the HRDC had forwarded a copy of its submission to the Minister for Primary Industries and Energy, Bob Collins.

"Following the completion of hearings in early March, the Corporation will be waiting with interest to see the recommendations contained in the final IC report presented to the Federal Government.

Mr Minnis said a final decision by the Government on the recommendations was not expected before the end of this year.

"It is up to industry to continue to clearly display the overall benefits provided by the current R&D Corporation model and ensure its concerns over the current recommendations are fully considered in the final decision," Mr Minnis said.

Brazil optimistic on apples, new fruit

Papers presented at the 12th Brazilian Fruiticulture Congress, held at Porto Alegre in January 1993, suggest that Brazil will increase its importance as an apple producer, and will exploit commercial possibilities of native fruits.

The region in which the congress was held has become an important apple producing area. There has been a rapid increase in plantings and production, especially in Santa Catarina State.

The area has been exporting apples to Europe in recent years, showing that Brazil can become a significant producer of temperate fruit crops.

At the Congress the marketing of fruits within the Mercosul, the South American grouping of trading countries, was discussed.

Progress in researching new fruit crops,

like Acerola, *Malpighia emarginata*, was discussed. This has been intensively planted during the last 5 years, and plantations now cover an area of 2,000 hectares.

Some native Amazonian fruits have been investigated with a view to commercial production.

The cupuaçu [*Theobroma grandiflora*, a relative of cocoa] is one of those fruits, yielding an excellent quality pulp for juice.

[News item based on a report in the ISHS journal *Chronica Horticulturae*, 1993 June]

[Tropical Fruit Station Alstonville: Research Report / 1992-94]

Lychee export market prospects 'incredibly good'

Lychees are a major crop in south-east China. There are estimated to be 300,000 ha of lychees. This is more than all Australian fruit industries combined!

There has been rapid expansion in recent years and in many areas citrus are being replaced by lychee. The major problem holding the industry back is the lack of adoption of techniques such as those developed in Australia for extending the shelf-life of the fruit. In a recent tour, there was widespread agreement that all of the anticipated increase in production could be consumed within China, given the improving standards of living and transport infrastructure.

China has not been given much consideration as a market for Australian fruit because of the low standard of living. The rate of economic growth is changing that. Australian macadamias have been sold into China in the last two years, more recently even chocolate-coated (value-added) product.

The potential for exports of fruits such as lychee from Australia is great because;

- *the fruit is known and highly esteemed in China, as it is in other rapidly growing south-east Asian economies such as Taiwan, South Korea, Malaysia, Thailand and Vietnam.*

- *there is a rapidly increasing standard of living, especially in the south-east of China where lychees are known best.*

- *our production is complementary to the Chinese, being from December to March, compared to June/July for China.*

- *we do not have any pests which are not already present in China.*

Australia is the only southern hemisphere



country capable of surface-freighting fresh lychees to south-east Asia.

Chinese consumers are willing to pay a three-fold premium for good quality, small-seeded varieties such as No Mai Chee. The Chinese, like their Japanese neighbours, seem to be happy to pay high prices for a quality product. The Australian selection, Salathiel, is as good, or possibly better than No Mai Chee and should find ready acceptance (export shipments to Hong Kong and Singapore over the last two seasons have been well received).

With abundant genetic resources of lychee, the small amount of effort going into genetic improvement in China is concentrated on selecting small-seeded, high-yielding types from within the existing populations of trees. There has been little interest in controlled-pollination breeding, although there was interest in the techniques Australia has developed to make this feasible, including the existence of precocity in some hybrids and the possibility of developing precocious breeding lines. South China Agricultural University has found a fully seedless type, which suggests that a

“Thompson Seedless” approach to lychee may be feasible.

If the Australian industry is to be ‘market focussed’ then emphasis should be given to growing small-seeded, high quality cultivars such as Salathiel. The objective of breeding should be to develop large fruited, small seeded, colourful, sweet, firm fleshed, high yielding cultivars. Such varieties will cement Australia’s future in exporting to South-east Asia. With about 400,000 ha of lychees in South-east Asia, there must also be good prospects for exporting superior patented cultivars. The use of ethephon to regulate flowering should be researched for

application to the Australian industry.

To sum up, the future prospects for markets looks incredible good with rapidly rising affluence in South-east Asia and moves towards trade liberalisation with countries in this area. The lychee is known and loved by people living in these areas and our season is six months out of phase with theirs. There has been strong interest from Hong Kong and Singapore agents in the last two seasons and prices for good quality Australian fruit have increased significantly.

The agents in this populous region want container loads of fruit, not cartons!

— D. J. Batten

[Australian New Crops Newsletter / 1995 Jan]

Israelis identify new desert fruit crops

The remarkable agricultural production achieved in Israel is well known. In this article Professor Yosef Mizrahi and Dr Avinoam Nerd of the Ben Gurion University of the Negev, Beer Sheva, give an outline of studies conducted on new crops for desert areas in Israel. Professor Mizrahi will give full details of this work in a paper he will present at the ACOTANC-95 Conference in Lismore in September 1995.

In 1985, a program was commenced in Israel to identify trees capable of producing fruits or nuts in desert areas.

A collection of wild or rare fruit or nut trees was introduced from around the world and these were planted in four introduction orchards around the Israeli Negev Desert. All orchards were irrigated with underground water, which was generally fairly saline.

Climatic conditions varied between the four sites; temperatures were extreme, ranging from 0°C to 40°C; evaporation levels were high, ranging from 1916 mm to

3905 mm; and rainfall was low, ranging from 43 to 230 mm.

All species were monitored for survival, growth, phenology, flower and fruit biology, yield and fruit quality. Many of the introduced species have already produced fruits and selections have been made.

The following species appear to offer particular promise:

Marula (*Sclerocarya birrea* subsp. *caffra*). This was an introduction from southern Africa and it produces both a fruit and a nut. It is a heavy yielder and selections from the wild are being vegetatively propagated.

Monkey orange (*Strychnos cocculoides*). This is a fruit tree also introduced from southern Africa. It has only recently begun to flower and bear fruit.

Yeheb (*Cordeauxia edulis*). This is a nut tree from the Horn of Africa. It has proved difficult to establish due to biological and climatic factors.

White sapote (*Casimiroa edulis*). This is a fruit tree from Mexico and Central America. Trial plantings of selected cultivars are being evaluated at two locations.

Cacti as Horticultural Crops

Mexico is one of the few countries which utilises cacti as foods. Most cacti fix CO₂ by the Crassulacean Acid Metabolism (CAM) pathway, which has a high water use efficiency, and is the reason why cacti are so well adapted to semi-arid and arid areas.

Flattened stem segments (cladodes) of the following species are used as a vegetable, known as 'nopal' or 'nopalitos' in Mexico; namely, *Opuntia ficus-indica*, *Opuntia amyloclea*, *Opuntia streptacantha* and *Nopalea cochinillifera*. These cladodes make tasty nutritious vegetables, either eaten fresh or cooked in a small amount of water.

The cochineal insect, *Dactylopius opuntiae*, is grown on the cladodes of *Opuntia ficus-indica* as a source of the highly-valued red dye, carminic acid.

The cactus pear, previously known as the prickly pear, is seen as one of the most promising of all the cacti fruits; its major problem is the very hard seeds which repel many consumers.

Many other columnar cacti produce attractive, tasty, colourful, soft-seeded fruits called pitayas or pitahaya. Sometimes the fruits are spineless, as with *Hylocereus undatus*, and several other species of the same genus, and *Cereus peruvianus*.

Other columnar cacti have spines which abscise upon ripening, such as *Selenicereus megalanthus* (which is already an export crop from Colombia), *Stenocereus griseus*, *Stenocereus stellatus*, *Stenocereus gummosus* and *Stenocereus thurberei*.

All of these species are now being grown in the Israeli Negev Desert and many have started to flower and set fruits. Several species raised from vegetatively propagated material are being tested at two locations on half-hectare blocks.

[Scientific Ag Co: Beekeeper Newsletter / 1995 April]

1995 California almond crop breaks record

Last year's almond crop was an all-time record 705 million pounds. This year's crop will be about 400 to 430 million pounds.

Yields are extremely variable, with some orchards close to 3000 lbs of meats/acre (a great yield any year) and some around 100 lb/ac. In general, young orchards have a better yield than older orchards (probably a reflection of post-bloom sunlight reception).

Kern county (the main area) has the best crop in the state. Although Kern county acreage is only 18% of the total acreage it may produce close to 50% of the year's crop.

Kern county growers are supposed to get a better crop each year (because of historically better bloom weather) but this is the first year in the past 10 years that Kern county has really enjoyed this advantage (the recent drought years meant good February-March weather state-wide). Kern county pays dearly for this climatic advantage through significantly higher water costs - around \$100/ac.ft. as against \$10/ac.ft. in northern California (almonds use about 3 acre feet of water/year).

As a result of this year's short crop, almond prices have reached record levels. Growers can sell their crop now for \$2/lb but many are holding out in anticipation of even higher prices. Many growers that have a very poor crop are covered by crop insurance and will not be hurt too badly.

— Joe Traynor

About ACOTANC Inc

(Australasian Council On Tree And Nut Crops)

ACOTANC is a coordination and liaison body, for which involvement is open to any type of organization. Organizations may be incorporated or unincorporated, formal or informal, as for example: grower associations, research stations, university departments or laboratories, commercial firms, and agencies of government.

Operation of ACOTANC will be in the hands of individuals who are nominated by constituent organizations. There are 3 classes of organization involvement.

1) Full Participants.

Full Participants are organizations who support the Council's aims and wish to have rights of voting and participation in the operation of the Council. Each Participant should at least 50% of its individual members within the ACOTANC Zone.

Each Participant will have equal and full rights to Council privileges and services, such as the right to apply for grants and services in the staging of conferences or the pursuit of research, the right to be represented in publications produced for the Council, and the right to nominate representatives to sit on the Council or on its Executive Committees.

Individual members of any Full Participant will have full rights to relevant ACOTANC privileges, such as preferential rates at ACOTANC-supported conferences, preferential discounts on ACOTANC-supported publications, and the right to apply for ACOTANC-supported scholarships and fellowships.

2) Local Affiliates

Local Affiliates are organizations within

the ACOTANC Zone who are interested in the Council's aims and wish to be kept informed of its activities and of activities generally in the area of tree and nut crops.

Affiliates will receive a copy of all general newsletters produced by ACOTANC during their period of subscription. Affiliates and individual members of Affiliates may also be offered advantages in such matters as attendance at ACOTANC-supported conferences, but at a lower level than those for Participants and members of Full Participants.

Affiliates will have no obligations toward ACOTANC other than the payment of current subscriptions, but will be encouraged to consider upgrading their ACOTANC status to that of full Participant when appropriate.

3) Out-Zone Associates

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ACOTANC Zone Definition

The ACOTANC Zone includes Australia, New Zealand, Papua New Guinea, and all countries with at least 10 percent of their territory on islands of the South Pacific or islands off the south, southeast, or east coasts of mainland Asia.

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About Acotanc Bulletin

Acotanc Bulletin is produced for ACOTANC Inc, the Australasian Council on Tree And Nut Crops — an umbrella group whose participants are themselves organizations with interests in productive perennial plant crops.

Acotanc Bulletin is issued twice each year, and carries news of general regional interest, news on forthcoming ACOTANC conferences and events, book reviews, and oversight views on particular tree crop industries and trends. All recipients and readers are asked to respond to

the Editor if they would like to receive later issues, and are urged to encourage their own organizations to participate in ACOTANC through a subscription.

Sample issues are available free of charge to any interested organization anywhere in the world, and will be sent to any group the reader recommends which may be interested. Please contact the Acotanc Secretariat at the address on page 2. Suggestions on future content and offers of contributions would be most welcome.

David Noel, Editor

ABOUT ATCROS

ATCROS, the Australasian Tree Crops Sourcebook, is the principal reference publication of ACOTANC Inc.

All the wealth of data it contains is included in series of tables. These include information on all sorts of fruits, nuts, and other tree crops, and branch and membership information for leading Australasian tree crop organizations. There is also a comprehensive Directory of suppliers of

plants, information, organizations and services within Australasia, and a selection of relevant contacts outside it. A listing of ATCROS contents is given on page 31.

The ATCROS Directory Tables are the principal reference source for people looking for supplies of trees, plants, publications, consulting services, and educational courses relating to tree crops. Copies are available at A\$10 each (A\$12 postpaid world-wide) from Granny Smith's Bookshop - see advert page 31.

Reprinting and re-use of articles from Acotanc Bulletin is encouraged.

Acknowledgement of source and authorship would be appreciated.

Submissions of articles, comments, or letters for Acotanc Bulletin are welcome. If text is available on computer disc (Macintosh preferred), this is much appreciated. Contact the Editor at the Tree Crops Centre.

Participation of Your Organization in ACOTANC

If your organization has interest in the use, conservation, and ecology of perennial plant species, for production of fruits, nuts, spices, animal fodder, beverages, pharmaceuticals, industrial and construction materials, and other bioproducts, you will find it to your advantage to subscribe to ACOTANC.

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